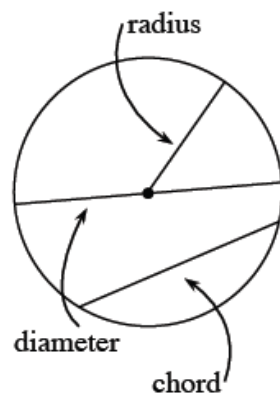


**CIRCLES – CIRCUMFERENCE AND AREA****CIRCUMFERENCE**

The radius of a circle is a line segment from its center to any point on the circle. The term is also used for the length of these segments. More than one radius are called radii. A chord of a circle is a line segment joining any two points on a circle. A diameter of a circle is a chord that goes through its center. The term is also used for the length of these chords. The length of a diameter is twice the length of a radius.



The circumference of a circle is similar to the perimeter of a polygon. The circumference is the length of a circle. The circumference would tell you how much string it would take to go around a circle once.

Circumference is explored by investigating the ratio of the circumference to the diameter of a circle. This ratio is a constant number, pi ( $\pi$ ). Circumference is then found by multiplying  $\pi$  by the diameter. Students may use  $\frac{22}{7}$ , 3.14, or the  $\pi$  button on their calculator, depending on the teacher's or the book's directions.

$$C = 2\pi r \quad \text{or} \quad C = \pi d$$

For additional information, see the Math Notes boxes in Lessons 8.3.3 and 9.1.2 of the *Core Connections, Course 2* text or Lesson 3.2.2 of the *Core Connections, Course 3* text. For additional examples and practice, see the *Core Connections, Course 3* Checkpoint 4 materials.

**CIRCLES – CIRCUMFERENCE AND AREA****AREA OF A CIRCLE**

In class, students have done explorations with circles and circular objects to discover the relationship between circumference, diameter, and pi ( $\pi$ ). To read more about the in-class exploration of area, see problems 9-22 through 9-26 (especially 9-26) in the *Core Connections, Course 2* text.

In order to find the area of a circle, students need to identify the radius of the circle. The radius is half the diameter. Next they will square the radius and multiply the result by  $\pi$ . Depending on the teacher's or book's preference, students may use  $\frac{22}{7}$  for  $\pi$  when the radius or diameter is a fraction, 3.14 for  $\pi$  as an approximation, or the  $\pi$  button on a calculator. When using the  $\pi$  button, most teachers will want students to round to the nearest tenth or hundredth.

The formula for the area of a circle is:  $A = r^2\pi$ .

## CIRCUMERENCE

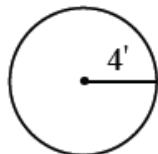
### Problems

Find the circumference of each circle given the following radius or diameter lengths. Round your answer to the nearest hundredth.

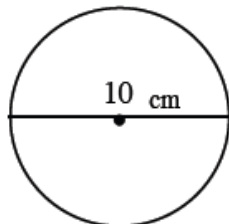
1.  $d = 12$  in.    2.  $d = 3.4$  cm    3.  $r = 2.1$  ft    4.  $d = 25$  m    5.  $r = 1.54$  mi

Find the circumference of each circle shown below. Round your answer to the nearest hundredth.

6.



7.



Find the diameter of each circle given the circumference. Round your answer to the nearest tenth.

8.  $C = 48.36$  yds    9.  $C = 35.6$  ft    10.  $C = 194.68$  mm

## AREA

### Problems

Find the area of the circles with the following radius or diameter lengths. Round to the nearest hundredth.

1.  $r = 6$  cm    2.  $r = 3.2$  in.    3.  $d = 16$  ft    4.  $r = \frac{1}{2}$  m  
5.  $d = \frac{4}{5}$  cm    6.  $r = 5$  in.    7.  $r = 3.6$  cm    8.  $r = 2\frac{1}{4}$  in.  
9.  $d = 14.5$  ft    10.  $r = 12.02$  m